REMARKS

I. Claim Status.

Claims 2-28 are pending in the application. Claims 4, 6, 8, 10, 13-21 and 24-28 are withdrawn from consideration. This Response and Amendment amends Claims 6-11, and 22 - 23, and cancels Claim 12.

II. Claim Amendments

Claims 6-11.

Claims 6-11 have been rewritten in independent form, also incorporating the amendments to Claim 22 described below. Accordingly, these amendments do not add new matter. Entry of these amendments is respectfully requested.

Claim 22.

Claim 22 has been amended to clarify the invention by explicitly stating, which was previously implied, that the reagent comprises "a reagent mixture of different classes of sensor particles in a fluid". The "reagent mixture" is explicitly described on page 4, lines 10-11 of the specification. Further, Claim 22 has been amended to state that the reagent mixture comprises "at least one type of sensor particle selected from the classes (a), (b), (c), (d), and (e)". Claim 22 now incorporates the limitations of cancelled Claim 12. Amended Claim 22 requires species (a), (b) and (d) and reads on the elected invention.

Claim 22 has also been amended to state that the various claimed sensor particles interact specifically with at least one analyte in a fluid, in varying language. Page 3, lines 15-17 describes that an advantage of the invention is to carry out analysis of multiple analytes in a fluid sample.

Accordingly, these amendments do not add new matter. Entry of the amendment is respectfully requested.

Claim 23.

Claim 23 has been amended to clarify that the plurality of particles are of "at least one type" of particles. Types of particles are described in the specification on page 5, i.e., a "type" of particle refers to all particles which interact in the same way with a given analyte. Accordingly, this amendment does not add new matter. Entry of the amendment is respectfully requested.

III. Restriction/Election Requirement.

A. Request To Reconsider Species Election Requirement.

In the papers dated 4/27/05 and 4/22/05, Applicants elected Group I, claims 2-12 and 22-23, with traverse. Further, Applicants elected species D, with traverse, antigen- or anti-body sensors.

Applicants invention is directed to a reagent mixture of different classes of sensor particles, and requires particles from classes (a), (b), (c), (d), and (e).

Restricting Applicants invention to one of only classes (c), (d), and (e) limits Applicants invention to less than their statutorily entitled invention and is improper under USPTO practice and procedure. Applicants request reconsideration and withdrawal of the species election on this basis.

In the event that the Examiner does not withdraw the species election, Applicants request that the non-elected species of Claim 22, i.e., (c) enzyme-sensor particles and (e) nucleotide sequence-sensor particles be considered as additional species should the elected species be found allowable.

B. Claims Directed To The Elected Species.

In the paper dated 4/27/05, Applicants erroneously stated that claims 6 and 10 were directed to the elected species. For the record, Applicants would like to correctly state that original Claims 2-3, 5, 7, 9, and 11-12, and new Claims 22-26, and 28 read on the elected species.

IV. The Rejections Under 35 USC § 112.

The Office has rejected Claims 9, 11-12 and 23 under 35 USC § 112, second paragraph for the reasons stated in numbered paragraphs 8-9. Applicants respectfully traverse this rejection and request reconsideration based on the following remarks.

A. Claim 23.

Claim 23 has been amended in paragraphs (a) – (e) to recite that the various sensor particles comprise "a plurality of at least one type of sample-insoluble particles . . . ." As described in the specification, a "type" of particle refers to all particles which interact in the same way with a given analyte. (See, Specification, page 5, lines 15-16). Thus, the term "a plurality

of at least one type of sample-insoluble particles" refers to plural sensor particles which interact in the same way with the same target ionophore.

These remarks and the clarifying amendment are believed to obviate the Examiner's basis for rejection. Withdrawal of the rejection is respectfully requested.

B. Claims 9, 11, and 12.

Claims 9, 11, and 12 are rejected, as stated in numbered paragraph 9 of the Office Action, on the basis that "enzyme-sensor particles (c) and nucleotide sensor particles (e) in claims 9, 11 and 12 are not considered as being non-elected species.

Applicants traverse this basis for rejection. Claims 9, 11, and 12 read on the elected invention, and claim the additional species enzyme-sensor particles (c) and nucleotide sensor particles (e). As stated by the Office on page 8, paragraph 3, in the Office Action dated 1/18/2005, Applicants are entitled to consideration of claims to additional species which contain all the limitations of an allowed generic claim. Accordingly, the rejection under 35 USC § 112 is improper. Applicants request withdrawal of the rejection on this basis.

V. The Rejection Over Van Den Engh et al. (US No. 5,747,349)

A. The § 102(b) Rejection Over Van Den Engh et al.

The Office has rejected Claims 2, 3, 5-6, 9, and 11-12 and 22-23 under 35 USC § 102(b) as being anticipated by Van den Engh et al (US 5,747,349) for the reasons stated in numbered paragraph 11 of the Office Action. Applicants respectfully traverse this rejection and request reconsideration based on the following remarks.

Applicants respectfully submit that Van den Engh et al. does not disclose a reagent mixture of different classes of sensor particles, the reagent mixture comprising sensor particles selected from each of the classes (a), ion-sensor particles; class (b), metabolite-sensor particles, and class (d) antigen- or antibody-sensor particles.

More specifically, Van den Engh et al. does not disclose class (d) antigen- or antibody-sensor particles in a reagent mixture with other classes of particles. Applicants would like to note that antibody (antigen) coated beads in Van den Engh et al. are referred to in the Background section of the description only. Van den Engh et al. describes these beads with regard to prior art optical flow cytometry, but does not describe these beads as part of reagent

mixture of different particles.

Van den Engh summarizes the analytes which can be measured with the reporter beads of the invention, stating:

> Analytes which can be measured using reporter beads of this invention include pH, O_2, CO_2, Ca^{+2}, Na^+, K^+, Cl^-, other halides, Mg^{+2}, Zn^{+2}, Tb^{+3}, and other metal ions including alkali and alkaline-earth ions, ionic strength, solvent polarity, albumin, alcohols, pesticides, organic salts such as lactate, sugars such as glucose, heavy metals, and drugs such as salicylic acid, halothane and narcotics. (Van den Engh, Col. 3, lines 5-12).

No where in this exhaustive laundry list of analytes, are antibodies or antigens listed.

In addition, Van den Engh et al. does not disclose "antigen- or antibody sensor particles which interact specifically with at least one antigen or antibody in a fluid". Van den Engh et al. discloses that the beads attach to a cell, and that it is the number of beads on the cell which is measured:

> antibody (antigen) cotated fluorescent beads can be used to detect the corresponding antigen (antibody) in a cell or on a cell surface. In this case the bead . . . contains an immuno-reactive group which functions to attach the bead to a cell. The fluorescence intensity of the cell is a function of the number of beads attached to the cell. . . . In immuno-assays in flow cytometers it is the number of beads on the cell or in the aggregate which determines the measured fluorescence intensity. (Col. 1, lines 54-66, emphasis added).

Finally, Van den Engh states that flow cytometers, in reference to antibody (antigen) coated fluorescent beads, "measure the cell properties, not the composition of the fluid bulk, as claimed by Applicants." Specifically, Van den Engh states that flow cytometers, in reference to antibody (antigen) coated fluorescent beads, "measure the cell properties, not the composition of the fluid bulk, as claimed by Applicants."

Accordingly, Applicants submit that Van den Engh does not disclose antigen- or antibody-sensor particles in a reagent mixture with other classes of particles, as required by Applicants invention. Applicants request withdrawl of the rejection under 35 USC § 102 over Van den Engh on this basis.

B. The Invention Is Non-Obvious Over Van Den Engh et al.

The Office has not asserted that the invention is obvious over van den Engh et al.

However, for the sake of completeness, Applicants submit that the invention is non-obvious over Engh et al.

As described above, Van de Engh does not disclose (a) antigen or antibody sensor particles in a reagent mixture of particles, and (b) antigen- or antibody sensor particles that interact "with at least one antigen or antibody in a fluid", as claimed by Applicants.

Further, there is no motivation to modify or combine Van de Engh, as Van de Engh specifically teaches away from Applicants claimed invention. Applicants claimed invention requires:

> "antigen- or antibody sensor particles which interact specifically with at least one antigen or antibody in a fluid,
> wherein each sensor particle is capable of interacting specifically with a corresponding target analyte, and capable of producing a fluorescent signal following interaction with the corresponding target analyte."

In contrast, Van de Engh states, "the reporter beads of this invention ***are not required to have*** an immunoreagent, such as a ligand, antiligand, ***antigen or antibody***, on the surface in combination with the reporter molecules." (Col. 3, lines 60-64, emphasis added).

Clearly, from this statement, it is apparent that combining antigen- or antibody sensor particles with the other particles described in Van den Engh, is not contemplated or desirable.

VI. The Rejection Over McDevitt et al. (US No. 6,680,206).

A. The § 102(e) Rejection Over McDevitt.

The Office has rejected Claims 2, 3, 5-6, 9, and 11-12 and 22-23 under 35 USC § 102(e) as being anticipated by McDevitt et al (US 6,680,206) for the reasons stated in numbered paragraph 11 of the Office Action. Applicants respectfully traverse this rejection and request reconsideration based on the following remarks.

Applicants respectfully submit that McDevitt et al. does not disclose "a reagent mixture of different classes of sensor particles in a fluid" as required by each of Applicants' independent claims.

The Office states that McDevitt et al. discloses "sensor arrays comprising plurality of sensitive particles (sensor particles) for identification of multiple analytes in a sample . . . ." (Office Action, page 7, par. 12). The Office has not asserted that McDevitt discloses a reagent

mixture of different classes of particles, and in fact, McDevitt does not disclose such a mixture of particles.

McDevitt et al. discloses a system of particles formed in an ordered array (Col. 4, line 26-28; col. 8, lines 2-3, 17-19, and 41-47). The particles are placed in predefined locations on the array by micromanipulators to create an ordered array having a predefined configuration of particles, or the particles may be randomly placed within the cavities and calibrated to determine the identity of the particle at any specified location on the array (Col. 10, lines 9-17).

Accordingly, Applicants submit that McDevitt et al. does not disclose a "reagent mixture of different classes of sensor particles in a fluid", as required by Applicants invention. Applicants request withdrawl of the rejection under 35 USC § 102 over McDevitt et al. on this basis.

B. The Invention Is Non-Obvious Over McDevitt et al.

The Office has not asserted that the invention is obvious over McDevitt et al. However, for the sake of completeness, Applicants submit that the invention is non-obvious over McDevitt et al.

Initially, Applicants note that McDevitt et al. does not describe mixtures of particles, in any combination. Thus, there is no suggestion or motivation to modify McDevitt to arrive at Applicants' invention.

Applicants' claimed particle mixture, and inherent, common reaction environment, is subject to more restrictive assay constraints than in the micromachined array described in McDevitt. All of the particles in Applicants' claimed mixture are subjected to a common reaction milieu, and the common reaction environment allows for reactions between particles that have diffusible reaction products.

The common reaction environment means that assays on some particles are suboptimized in order to allow effective assay on other particles. For example, a first assay particle may have optimal sensitivity at alkaline pH (e.g. assay for alkaline phosphatase activity). This pH, however, destroys the responsivity of particles assaying for potassium, which require that the indicator be protonated to produce the detectable ion exchange. As described in the specification, Applicants designed an effective assay for multiple particles in suspension, which

balances the competing needs of different assays.

In contrast, McDevitt teaches isolating each particle into an individual reactor cell where its assay conditions are locally altered to better suit the individual assays. For example, McDevitt teaches (cols. 41 and 42) that a fluid may be selectively pumped into a designated reactor cell to alter conditions (as by releasing a reagent bound to a particle) in that cell, but not in all cells.

Accordingly, there is no teaching or suggestion of a mixture of particles in McDevitt that measures different analytes in solution.

Further, Applicants invention has other advantages, notably it is simpler and subsequently lower cost than the above described invention.

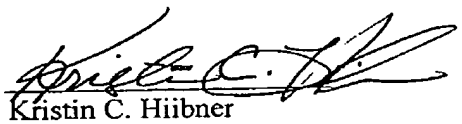
CONCLUSION

The Applicant believes that all pending claims are in condition for allowance and such action is earnestly requested. If the present amendments and remarks do not place the Application in condition for allowance, the Examiner is encouraged to contact the undersigned directly if there are any issues that can be resolved by telephone with the Applicants representative.

The Commissioner is authorized to charge $1,020.00, the fee for a three-month extension, to deposit account No. 19-2090. No other fees are believed due with this Response. However, if any fees are due, the Commissioner is authorized to charge any such fees to deposit account No. 19-2090.

Respectfully Submitted,
SHELDON & MAK PC

Date: December 14, 2005

By 
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